Course Information

Grade(s):	**Grade 3**
Discipline/Course:	**Mathematics**
Course Title:	**Grade 3 Mathematics**
Prerequisite(s):	Grade 2 Mathematics
Course Description: *Program of Studies*	Grade 3 students move from additive thinking to multiplicative thinking deepening their understanding of addition and subtraction as they make connections to multiplication and division within 100. They develop an understanding of multiplication and the inverse relationship with division with whole numbers through the use of multiple representations e.g. equal-sized groups, arrays, area models, and equal jumps on a number line for multiplication and successive subtraction, partitioning, and sharing for division. Relationships can be generalized and represented through rules. Fractions are understood in terms of unit fractions and parts of a whole. Objects and geometric shapes and figures can be described and categorized based upon measurement and classification of special attributes. Multiplication concepts are developed through the use of a variety of models including the area model.
Course Essential Questions:	● How are multiplication and division related to addition and subtraction? ● How does equal-sized grouping of quantities help make computation more efficient? ● How is a fraction the same and different from a whole number?
Course Enduring Understandings:	● Multiplication and division are related to addition and subtraction. ● Multiplication and division are inversely related. ● There are place value patterns that result from adding and subtracting ten and multiplying and dividing by ten. ● Unit fractions can be counted and added or subtracted.

	• Tools like number lines help to visualize numbers, number relationships and fractions. • The size of the whole matters when considering and comparing fractions.
Course Standards *Note: The Board of Education adopted elementary mathematics standards for this course will remain the same; however, the sequence of units and standards among units may shift over time in response to student performance needs.*	**Students are expected to:** MP.1. Make sense of problems and persevere in solving them. *In third grade, students know that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Third graders may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They listen to the strategies of others and will try different approaches. They often will use another method to check their answers.* MP.2. Reason abstractly and quantitatively. *Third graders should recognize that a number represents a specific quantity. They connect the quantity to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities.* MP.3. Construct viable arguments and critique the reasoning of others. *Third grade students construct arguments using concrete referents, such as objects, pictures, and drawings. They refine their communication skills as they participate in mathematical discussions involving questions like, "How did you get that?" and "Why is that true?" They explain their thinking to others and respond to others' thinking.* MP.4. Model with mathematics. *Students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart, list or graph, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Third graders should evaluate their results in the context of the situation and reflect on whether the results make sense.* MP.5. Use appropriate tools strategically. *Third graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use graph paper to find all the possible rectangles that have a given perimeter. They compile the possibilities into an organized list or a table, and determine whether they have all the possible rectangles.* MP.6. Attend to precision. *As third graders develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and in their own reasoning. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the area of a rectangle they record their answers in square units.*

	MP.7. Look for and make use of structure. *In third grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to multiply and divide (commutative and distributive properties).* MP.8. Look for and express regularity in repeated reasoning. *Students in third grade notice repetitive actions in computation and look for more shortcut methods. Students may use the distributive property as a strategy for using products they know to solve products that they don't know. For example, if students are asked to find the product of 7 x 8, they might decompose 7 into 5 and 2 and then multiply 5 x 8 and 2 x 8 to arrive at 40 + 16 or 56. In addition, third graders continually evaluate their work by asking themselves, "Does this make sense?"* Adapted from the Connecticut Standards for Mathematics
FPS Academic Expectation(s):	**Exploring and Understanding** *When students engage in problem solving situations, they should be able to understand the problem, determine relevant information, and ask relevant additional questions.* **Synthesizing and Evaluating** *Engaging in a problem solving situation, students should be able to analyze the most efficient approach, and reflect on the process used to solve the problem.* **Creating and Constructing** *Engaged in a problem solving situation, students should implement a plan.* **Conveying Ideas** *Students should be able to use correct mathematical language and logically display their work for the desired problem.* **Collaborating Strategically** *Students should be able to work collaboratively to solve problems.* **Using Communication (Media) Tools** *Students should be able to explore and choose the correct tools to illustrate their mathematical work to solve a specific problem.*
Duration:	1 year
Course Materials/Resources:	Bridges 2nd ed. Fairfield Public Schools Math Units

Additional Resources (Optional)	Illustrative Mathematics About Teaching Mathematics, Marilyn Burns Contexts for Learning Mathematics, Fosnot et al.

Unit 1

Unit 1: Whole Number Concepts, Estimation and Computation using Addition and Subtraction	The purpose of this unit is to establish a mathematical community of thinkers and problem solvers. The first unit is intended to engage students in thinking about previously taught material differently while the focus of the lessons is on learning how to engage one another as mathematicians using 21st century skills in a mathematical context. Some examples include; turn & talk, think-pair-share, justify reasoning and constructing viable arguments. Students represent their thinking using mathematical models and numbers, questioning peers for deeper understanding and clarification. The correctness of solutions lies within the logic of the mathematics.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** 3.OA.8- Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

	Number and Operations in Base Ten **Use place value understanding and properties of operations to perform multi-digit arithmetic** 3.NBT.2 - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Essential Question(s):	● How do patterns with addition of equal groups help us to make generalizations or rules? ● How could we compose or decompose numbers to make them easier to add and subtract? ● Which strategy is the most efficient for adding or subtracting given a set of numbers and why? ● How do you know if expressions are equivalent? ● How do partial sums and differences make it easier to do mental computations? ● How can mathematics problems be written as mathematical expressions?
Enduring Understanding(s):	● Identifying patterns in mathematics helps us to make generalizations. ● Equivalence may be shown as models and equations. (i.e. 4+8 = 7+5) ● Compose and decompose whole numbers using partial sums and differences, both standard and non-standard groupings, to help flexibly and efficiently compute with numbers. ● Flexible use of strategies to find sums and differences depend on understanding and number sense. ● Equivalent expressions can be represented differently. ● A variety of representations for creating and solving word problems can be used for addition and subtraction, and numeric expressions match the problem.
Learning Goal(s): *Students will be able to use their learning to:*	Compose and decompose whole numbers to flexibly and efficiently add and subtract numbers. Identify and solve addition and subtraction problems with different problem structures including change and comparison problems. Write story problems to represent equations and write equations to represent story problems.

	Apply algebraic properties of commutativity and associativity to addition problems.

Unit 2

Unit 2: Whole Number Place Value Concepts, Estimation and Computation	The purpose of this unit is to connect the work from grade 2 of composing and decomposing numbers to extend the understanding of the structure of our place value system and base ten. The concept of multiple sets of equal-sized groups of 10s, 100s, 1,000s, and 10,000s also builds understanding for the work with multiplication and division in later units. Numbers are composed and decomposed using expanded notation, as well as regrouping numbers, to deepen understanding of equivalence. Grade 3 students develop an understanding of number relationships and generate generalized rules for using multiples and factors of 10.
Learning Goals	
Standard(s):	**Number and Operations in Base Ten** **Use place value understanding and properties of operations to perform multi-digit arithmetic** 3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100. 3.NBT.2 - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction. **Operations and Algebraic Thinking** **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** 3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.
Essential Question(s):	● How can using place value patterns and understanding of number relationships help with estimation? ● What pattern occurs in our number system when multiplying and dividing by (10, 100, 1,000, 10,000…)? ● How do benchmark numbers help us think and solve problems?

	● How are adding or subtracting equal groups similar to multiplication and division?
Enduring Understanding(s):	● Using place value patterns and understanding of number relationships is foundational to estimation. ● Skip counting is counting equal groups and leads to repeated addition. ● Repeated addition & subtraction is a pattern that can be extended. (i.e. 120, 220, 320, 420…) ● Repeated addition leads to multiplicative thinking, e.g., 5 equal groups of 10 is 5 groups of 10 or 10, five times written as 5 x 10 = 50. ● Our number system is structured around multiples and factors of ten. ● The place value structure is based on multiples of or powers of ten, including the expanded form, e.g., 4,236 = ○ o (4 thousands) + (2 hundreds) + (3 tens) + (6 units) or 4,000+200+30+6 ○ o (4 x 1,000) + (2 x 100) + (3 x 10) + (6 x 1), or ○ o (4 x 10 x 10 x 10) + (2 x 10 x 10) + (3 x 10) + (6 x 1) ● Equivalent expressions can be represented differently.
Learning Goal(s): *Students will be able to use their learning to:*	Reason abstractly and quantitatively about equivalent expressions and how they can be represented differently. Ask questions and investigate how using place value patterns and understanding of number relationships helps in determining estimations. Construct explanations of how using patterns, structures and relationships of our place value system help when multiplying and dividing numbers. Compare and order 4-digit numbers based on understanding of place value and relative magnitude of number.

Unit 3

Unit 3: Whole Number Concepts, Estimation, and Computation with Early Multiplication and Division	The purpose of this unit is to develop the understanding of multiplication and division and their inverse relationship. Multiplication is a more efficient method for repeated addition. Students create and analyze patterns that involve ratio relationships (e.g. the number of wheels is 4 times the number of cars.) Students deepen their understanding of addition and subtraction and make a connection to thinking multiplicatively with whole numbers as it relates part-part-whole relationships of equal-sized groups. Third graders begin developing flexible and fluent use of all four operations for numbers 0-10.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Represent and solve problems involving multiplication and division.** 3.OA.1 - Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7. 3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8. 3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 3.OA.4 - Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = ? ÷ 3, 6 × 6 = ?.

	Understand properties of multiplication and the relationship between multiplication and division. 3.OA.5 - Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property) **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** 3.OA.8 - Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. **Number and Operations in Base Ten** **Use place value understanding and properties of operations to perform multi-digit arithmetic.** 3.NBT.1 - Use place value understanding to round whole numbers to the nearest 10 or 100. 3.NBT.2 - Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.
Essential Question(s):	● How does decomposing numbers to compute using partial products and partial factors make mental computations more efficient? ● How are multiplication and division related to addition and subtraction? ● How is multiplication related to division? ● How do algebraic properties help make estimating and solving problems easier? ● How can mathematical problems be represented through mathematical expressions?

Enduring Understanding(s):	● There are often multiple and valid approaches to solving mathematical problems. ● Different situations (numbers) lend themselves to using different computation strategies. ● Multiplication and division are efficient methods that are related to addition and subtraction. ● Multiplication and division are inverse relations. ● A variety of strategies for computing can be generalized to become rules that can be applied to new and different problems. (generalized procedures) ● Distributive property of multiplication over addition and subtraction builds on using known facts to find unknown products. Partial factors can also be used for division. ● Benchmark numbers help to make computation easier to estimate and mentally compute. ● Place value patterns and estimation support multiplicative thinking. ● Multiplication and division can be modeled using arrays, number lines, sets and to visualize patterns and processes.
Learning Goal(s): *Students will be able to use their learning to:*	Determining related multiples, e.g. 2, 4, 8 or 3, 6, 9 or 5 & 10 can be used to help solve related multiplication problems. Model and solve multiplication and division problems using arrays, number lines, and place value patterns. Multiply and divide within 100 using a variety of strategies. Develop and use models to represent patterns and processes for efficiently solving multiplication and division problems. Recognize and use the relationship between multiplication and division to think about and solve problems.

Unit 4

Unit 4: Whole Number Concepts, Estimation and Computation using Addition and Subtraction with Multiplication & Division	The purpose of this unit is to deepen the development of multiplication and division concepts and their inverse relationship. Greater facility with mental computation strategies and estimation become more significant as students evaluate the efficiencies of alternative strategies including the standard algorithm. Algebraic properties are applied to whole numbers and decimal numbers when students compute using partial products and partial quotients. Although greater numbers are explored, automaticity with basic facts is the goal with all four operations 0-10 by the end of grade 3.
Learning Goals	
Standard(s):	**Operations and Algebraic Thinking** **Represent and solve problems involving multiplication and division.** 3.OA.1 - Interpret products of whole numbers, e.g., interpret 5 × 7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5 × 7. 3.OA.2 - Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8. 3.OA.3 - Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem. 3.OA.4 - Determine the unknown whole number in a multiplication or division equation relating three

	whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 × ? = 48, 5 = ? ÷ 3, 6 × 6 = ?. **Understand properties of multiplication and the relationship between multiplication and division.** 3.OA.5 - Apply properties of operations as strategies to multiply and divide. Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property) 3.OA.6 - Understand division as an unknown-factor problem. For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8. **Multiply and divide within 100.** 3.OA.7 - Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers. **Solve problems involving the four operations, and identify and explain patterns in arithmetic.** 3.OA.8 - Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. 3.OA.9 - Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends. **Number and Operations in Base Ten** 3.NBT.3 - Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9 × 80, 5 × 60) using strategies based on place value and properties of operations.

Essential Question(s):	● How do partial products and partial quotients (factors) make it easier to do mental computations? ● How can math problems be represented by expressions and equations and vs.? ● How is multiplication related to division? ● What are efficient ways to compute?
Enduring Understanding(s):	● There are multiple ways both standard (place value) and non-standard to compose and decompose numbers. ● Different situations lend themselves to using different computation strategies. ● Multiplication and division are efficient methods that are related to addition and subtraction. ● Multiplication and division are inverse relations. ● A variety of strategies for computing can be generalized rules which can be applied to similar problems. ● Distributive property of multiplication over addition and over subtraction can be applied using standard and non-standard numbers. ● Benchmark numbers help to make it easier to mentally compute and make estimations. ● Place value patterns and estimation support understanding of multiplication and division. ● Multiplication and division can be modeled, e.g. sets, arrays, and number lines.
Learning Goal(s): *Students will be able to use their learning to:*	Look for and make use of partial products and partial quotients within a ratio table to solve more complex multiplication and division problems. Reason abstractly and quantitatively using understandings of patterns and decimal numbers such as .25 and .99 to multiply. Use repeated reasoning to find strategies such as doubling, halving, benchmark numbers and properties of multiplication and related understanding of division to efficiently compute. Use appropriate tools strategically to find area and perimeter.

	Connect area models to multiplication concepts.

Unit 5

Unit 5: Fractions and Measurements	The purpose of this unit is to deepen the understanding of fractions as a whole decomposed into equal parts. Students understand the part-whole relationship as equal groups and equal shares of a whole unit. Each of these equal shares can be counted as a unit fraction. There are many ways for students to represent fractions as parts of a whole, parts of sets, area models, or units on a number line. Students compare and order fractional quantities and recognize equivalence. Students will relate fractions to measurement while measuring elapsed time, length, weight and volume. Models such as number lines and line plots will be used to organize information to make understandings visible.
Learning Goals	
Standard(s):	**Number and Operations—Fractions** **Develop understanding of fractions as numbers.** 3.NF.1 - Understand a fraction 1/b as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size 1/b. 3.NF.2 - Understand a fraction as a number on the number line; represent fractions on a number line diagram. a. Represent a fraction 1/b on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into b equal parts. Recognize that each part has size 1/b and that the endpoint of the part based at 0 locates the number 1/b on the number line. b. Represent a fraction a/b on a number line diagram by marking off a lengths 1/b from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line. 3.NF.3 - Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size. a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a

	number line. b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3. Explain why the fractions are equivalent, e.g., by using a visual fraction model. c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram. d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. **Measurement and Data** **Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.** 3.MD.1 - Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram. 3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem. **Represent and interpret data.** 3.MD.3 - Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs. For example, draw a bar graph in which each square in the bar graph might represent 5 pets. 3.MD.4 - Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate

	units— whole numbers, halves, or quarters.
Essential Question(s):	● What is a fraction? ● How do benchmark fractions help us to estimate solutions to problems? ● How can you tell when a fraction is larger/smaller when comparing fractions? ● How do you know when two fractions represent the same quantity? ● How can you use what you know about multiplication and division to help you think about fractions? ● How can you read, write and tell time on analog and digital clocks to the nearest hour, half hour, and quarter hour? ● How can you tell time to the nearest minute? ● How can you use an open number line to measure elapsed time in hours and minutes? ● How do you know which metric or customary unit to use to measure the length, weight or volume? ● How can you read and organize data in a line plot?
Enduring Understanding(s):	● Benchmark fractions are helpful for estimating and computing. ● The more the whole is divided into equal parts, the smaller the parts, e.g. 8ths are smaller than 4ths. ● The denominator is the number of equal parts and the numerator is the number of equal parts being considered. ● Fractional parts must be of equal size. ● Equivalent fractions can represent the same quantity, e.g. 1/2 = 2/4 ● A fraction with the same numerator and denominator is equal to one whole. ● Fractions are relations - the size of a fractional part is relative to the size of the whole and the size of the whole (unit) is important. ● Fractional parts can be represented as sets (or groups), area, or linear models. ● Fractional parts are represented by demarcations, but are not the demarcations themselves, e.g. a linear measurement is the distance between 0 and ½ not the mark that indicates ½. ● Fractions can be added and subtracted.

Learning Goal(s): *Students will be able to use their learning to:*	Model with fractions to determine the relationship between fractions and division. Identify fractional parts and equivalent fractions within a whole. Model and explain with fractions that the size of the whole matters when considering and comparing fractions. Use appropriate tools such as a number line strategically to model and compare fractions, Establish start time, end time, and determine elapsed time. Attend to precision when measuring length, weight, volume and mass. Record and analyze data using a line plot.

Unit 6

Unit 6: **Geometry**	The purpose of this unit is to develop spatial reasoning through identifying and visualizing spatial relationships. Objects and shapes can be described and categorized based upon measurement and classification of their specific attributes. Students begin to move beyond the appearance of shape as descriptors to using attributes to describe them and make generalizations, e.g., a square with four sides, opposite sides are parallel and four right angles, begin to fit into a class of shapes, rectangles, and even into a larger category of quadrilaterals.
Learning Goals	
Standard(s):	**Geometry** **Reason with shapes and their attributes.** 3.G.1 - Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories. 3.G.2 - Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape. **Measurement and Data** **Geometric measurement: understand concepts of area and relate area to multiplication and to addition.** 3.MD.5 - Recognize area as an attribute of plane figures and understand concepts of area measurement. a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area. b. A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.

	3.MD.6 - Measure areas by counting unit squares (square cm, square m, square in, square ft., and improvised units). 3.MD.7 - Relate area to the operations of multiplication and addition. a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths. b. Multiply side lengths to find areas of rectangles with whole number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning. c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning. d. Recognize the area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems. **Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures.** 3.MD.8 - Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
Essential Question(s):	● How can shapes be composed and decomposed into other shapes? ● What attributes are shared and not shared among different shapes? ● What needs to be considered when estimating measures and how do they compare to the actual measures of shapes and why? ● In what ways are shapes the same, similar or different when they are moved in space? ● What attributes can you use to sort and classify two-dimensional shapes? ● What patterns emerge when finding the area and perimeter of shapes? ● How does finding the area of rectangles help with understanding multiplication and division?

	● How are area models related to the distributive property?
Enduring Understanding(s):	● Equal units of measure can be used to quantify geometric attributes. ● The orientation (transformations) of the shape does not change the shape, e.g., a square rotated 45° is still a square. ● Shapes and solids can be composed and decomposed (part-whole relations). ● Geometric shapes can be described through estimated and actual measurements. ● Area is measured in square units. ● Parts of shapes can be described in fractional terms. ● Area is an attribute of two-dimensional regions. ● Shapes are alike and different based on their geometric attributes. ● Shapes in different categories may share attributes. ● A unit measure represents an amount between demarcations rather than a mark on a scale itself. ● The area model can be represented mathematically by the distributive property of multiplication over addition or over subtraction.
Learning Goal(s): *Students will be able to use their learning to:*	Describe and use attributes to define, compare, and categorize polygons. Use models to compose and decompose geometric shapes and explain relationships. Represent and find the area mathematically by applying the distributive property of multiplication to models and explain why it works. Attend to precision when measuring the area and perimeter of polygons. Analyze and interpret irregular polygons by decomposing the shape to determine the area.